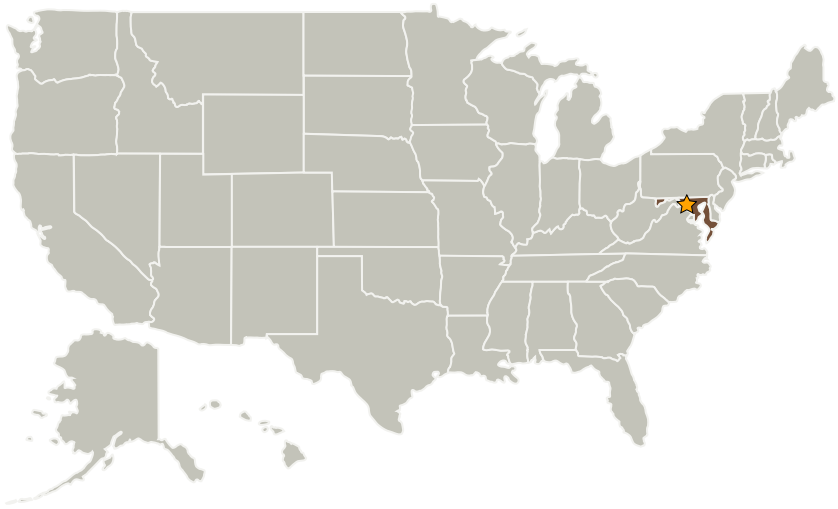
GaN Based UV Sensors for Earth Resources Management, Phase I

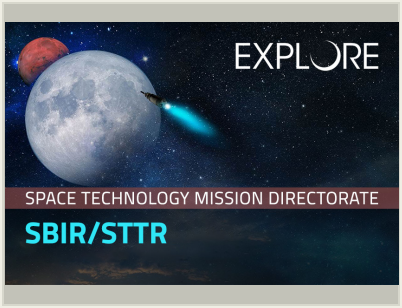
Completed Technology Project (2005 - 2006)

Project Introduction

The purpose of the proposed work is to develop a multi-color imaging array capable of simultaneously detecting radiation in either the UVa (400-320nm) and UVb (320-290nm), or UVa (400-320nm) and UVc (290-100nm) wavelength bands. This will be the first such device ever fabricated. Imagers of this type can identify and track rocket trajectories even in bright sunlight. Many types of camouflage material are transparent in the UV, allowing for ordinance detection beneath camouflage. Earth resource management (crop data acquisition and weather prediction) will also benefit from this activity. Our research team has fabricated a single-color GaN imaging array. We found that bright solar radiation does create a significant background signal that makes missile plume identification difficult. The solar spectrum provides well-defined intensity ratios of UVa, UVb and UVc radiation. Sensing simultaneously in two of the three bands allows for rejection of signals with the solar ratio signature. This significantly reduces the possibility of registering false positive alarms.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
TechnoVentures, LLC	Supporting Organization	Industry	Silver Spring, Maryland

Primary U.S. Work Locations
Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

J Ari Tuchman

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes